BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

FILED
10-07-16
04:59 PM

Second Application of Pacific Gas and Electric Company for Approval of Agreements Resulting from Its 2014-2015 Energy Storage Solicitation and Related Cost Recovery (U39E).	Application 16-04-024 (Filed April 29, 2016)

REPLY BRIEF
OF THE OFFICE OF RATEPAYER ADVOCATES

[PUBLIC VERSION]

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October 7, 2016

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I. INTRODUCTION

Pursuant to Rule 13.11 of the California Public Utilities Commission's (Commission) Rules of Practice and Procedure (Rules) and the schedule set forth by the July 25, 2016 Scoping Memo,[1] the Office of Ratepayer Advocates (ORA) replies to parties' opening briefs filed in Application (A.) 16-04-024, *Second Application of Pacific Gas and Electric Company (U 39 E) For Approval Of Agreements Resulting From Its 2014-2015 Energy Storage Solicitation And Related Cost Recovery* (Second Application), on September 23, 2016.

ORA replies to the following issues:

- The agreement between Pacific Gas and Electric Company (PG&E) and Stem, Inc. dba Stem Energy Northern California, LLC (Stem) (Agreement) to provide four megawatts (MW) of behind-the-meter (BTM) energy storage for resource adequacy (RA) and flexible RA is not cost-effective;

- The assumption that the Commission and the state's ratepayers should support a storage project for the learning opportunities it may afford regardless of whether it is cost effective is inconsistent with statute and the energy storage program and framework;

- The Agreement is a demonstration project and is similar to learning experiences funded in other Commission authorized programs; and,

- PG&E did not provide an assessment of the Agreement's project viability.

For these reasons, the Agreement cannot be found just and reasonable, and the Commission should reject PG&E's Second Application.

[1] *Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge* ("Scoping Memo").

II. DISCUSSION

A. The Agreement is not cost-effective

As required by Assembly Bill (AB) 2514[2] and the Commission's energy storage program, all energy storage procured pursuant to the Commission's energy storage mandate[3] must be cost-effective. Both Stem and PG&E dispute ORA's findings that the Stem Agreement is not cost-effective

1. The Agreement is not cost-effective according to all cost-effectiveness methodologies

Stem asserts that ORA imposes an overly narrow approach to cost-effectiveness.[4] However, ORA based its analyses on the results of PG&E's and the Commission's cost-effectiveness methodologies. ORA's evaluation focused on PG&E's adopted 2014 Energy Storage Procurement Plan,[5] where the Commission authorized PG&E to use an evaluation methodology incorporating Net Market Value (NMV), Portfolio Adjustment Value (PAV), and specific qualitative assessments.[6] ORA's review also took into consideration D.14-10-045, which directed the investor owned utilities (IOU) to evaluate energy storage offers based on a Consistent Evaluation Protocol (CEP).[7] Based on these various assessments, ORA determined the Agreement is not cost-effective under any of these established methodologies.

PG&E's testimony demonstrates that the Agreement received [redacted] evaluations under its NMV and PAV evaluation, and the Commission's CEP.[8] PG&E concedes the

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[2] Pub. Util. Code §§ 2835(a)(3), 2836, 2836.2(d), 2836.6.

[3] D.13-10-040, p. 42.

[4] Stem Opening Brief, p. 13.

[5] D.14-10-045, issued in Application of Pacific Gas And Electric Company (U 39-E) For Authorization To Procure Energy Storage Resources (2014-2015 Biennial Cycle), A.14-02-007. The evaluation methodologies adopted in D.14-10-045 were vetted using stakeholder participation.

[6] D.14-10-045, OP 1(8), p. 119.

[7] D.14-10-045, OP 1(8), p. 119.

[8] ORA Protest, pp. 5-11; ORA Opening Brief, pp. 6-13.

Agreement's value is [redacted].[9] Based on this record evidence, the Agreement is uneconomical.

Furthermore, PG&E's approved cost-effectiveness methodology includes additional qualitative criteria such as contract term, online date, and technology diversity.[10] According to PG&E, these adjustments "can move some slightly lower-valued projects into the shortlist."[11] However, even with consideration of these adjustments, the Agreement is not cost-effective. Furthermore, such qualitative adjustments cannot act as a complete substitute for an offer's economic valuation result. Evidence shows the Agreement is [redacted] to PG&E's energy storage contracts approved in D.16-09-004. Therefore, the Commission cannot conclude that the Agreement is cost effective.

Moreover, the Independent Evaluator's (IE) Report indicates that the "[redacted]."[12] However, opportunities for experience cannot negate the fact that the Agreement is uneconomical. ORA sees value in projects that provide learning opportunities and experience. However, these types of projects are more appropriately considered via existing mechanisms discussed below. The Agreement's attributes are reflected in the objectives and scope of PG&E's ratepayer-funded Electric Program Investment Charge (EPIC) and demand response pilots.[13]

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[9] Exh. PG&E-1C, Appendix C, p. C-27, stating, "[redacted]."

[10] Exh. PG&E-1, p. 4-2. Technology diversity encompasses both technological and project configuration (end-use) diversity. Exh. PG&E-1, p. 3-5.

[11] Exh. PG&E-1, p. 4-2. Emphasis added.

[12] Exh. PG&E-1C, Appendix C, p. C-27, stating, "[redacted]."

[13] ORA Opening Brief, pp. 16-18.

2. Under the Commission's storage framework, determination of cost-effectiveness is not end-use specific

Stem states that the Agreement cannot be fairly compared with transmission- or distribution-connected projects or with behind the meter (BTM) projects that have different attributes and provide different benefits.[14] Stem's arguments should be rejected.

First, the Commission did not define cost-effectiveness differently for various use cases or applications of energy storage, nor did the Commission intend for utilities to only compare energy storage offers with exact, like-offers. Rather, the Commission authorized the IOUs to develop and use their own proprietary evaluation methodologies and required the IOUs to procure storage via competitive solicitations based on their biennial procurement plans.[15] As noted above, the methodologies approved by the Commission and used by the IOUs already include qualitative criteria such as contract term, online date, and technology diversity. Second, this application is not the appropriate place to critique the Commission-adopted cost-effectiveness evaluation methodologies. Rather, parties had the opportunity to vet PG&E's cost-effectiveness methodology in PG&E's 2014 Energy Storage Procurement Plan proceeding,[16] adopted by the Commission in D.14-10-045 and reaffirmed in D.16-09-007, the decision adopting the IOUs' 2016 biennial energy storage procurement plans.[17] Stem's argument for a narrowed procurement and evaluation approach—that is end-use specific—conflicts with the Commission's established policies regarding the evaluation of Energy Storage projects.

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[14] Stem Opening Brief, p. 14.

[15] D.13-10-040, p. 52.

[16] A.14-02-007.

[17] D.16-09-007, issued in A.16-03-001, Application of Pacific Gas and Electric Company (U 39-E) for Authorization to Procure Energy Storage Systems during the 2016-2017 Biennial Procurement Period Pursuant to D.13-10-040, p. 10.

In a competitive solicitation, third-parties may bid-in offers with varying attributes, but the bid must still be competitively priced in a head-to-head evaluation. As required by D.13-10-040, "a project will be bid in [to the RFO] and evaluated based upon the net cost to ratepayers."[18] In this context, the Agreement was bid into PG&E's 2014-2015 Energy Storage RFO. If not for extended negotiation timelines,[19] the Agreement would have been executed and filed with PG&E's other executed contracts. In comparison to other shortlisted offers, while the Agreement has an earlier online date and a very short contract term, the Agreement results in [redacted] based on its PAV result. PG&E failed to justify how this Agreement is reasonable given that the qualitative benefits provided by this resource may only slightly improve its rank on the shortlist. However, qualitative benefits cannot substitute for cost-effectiveness.

B. The Commission's energy storage program does not support gaining learning opportunities at any cost

In its argument for contract approval, Stem relies on the Independent Evaluator's (IE) statement that "[t]he project offers an accelerated opportunity for PG&E to gain knowledge of how BTM resources will be co-optimized to serve the needs of their retail customers and the CAISO [California Independent System Operator] Energy market."[20] The Commission should reject this rationale as the basis for approving the Agreement. The Energy Storage Program is not intended to support learning opportunities in lieu of cost effectiveness, and contract approval based on such criteria would be inconsistent with legislative directives and the Commission's Energy Storage Program framework, which requires all energy storage procurement to be cost-effective and viable.[21]

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[18] D.13-10-040, p. 56.

[19] A.15-12-004, p. 3.

[20] Stem Opening Brief, p. 9 [cite omitted].

[21] D.13-10-040, Finding of Fact 17, p. 72: "AB 2514 requires that energy storage systems procured be viable and cost-effective."

Furthermore, adopting an Agreement that is not cost-effective would compromise the Energy Storage Program goals, which were intended to promote competition by adopting a broad definition of energy storage[22] and requiring competitive solicitations.[23] The IE's observation that the Agreement [redacted] should result in the Commission's rejection of the Agreement. Whether the Agreement can provide learning opportunities should not be a basis for approving it, if it is not cost-effective. The Commission should reject the IE's reasoning that follows, since it is inconsistent with the statute. Specifically, the IE states:

> [redacted] but the term is five (5) years and the Project has the [redacted]. The IE therefore recommends CPUC consider approval of the BTM ES RAA with Stem based on the notion that experience with these types of resources adds value as a learning experience, [redacted]

It is not clear why the IE would recommend that the Commission consider approval of the Stem Agreement when the IE observed that PG&E selected the Agreement despite the fact it identified [redacted].[25]

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[22] D.13-10-040, p. 51:

> As determined in D.12-08-016, the definition of energy storage system utilized in this proceeding is the one articulated in Section 2835(a). This definition is intended to embrace a mix of ownership models and contribute to a diverse portfolio than can encourage competition, innovation, partnership, and affordability. [Cite omitted]

[23] D.13-10-040, Conclusion of Law 33, p. 75. See also, D.07-12-052, *Opinion Adopting Pacific Gas and Electric Company's Southern California Edison Company's, and San Diego Gas & Electric Company's Long-Term Procurement Plans*, p. 155:

> A well-functioning competitive process requires that all bids – including the bids of utility-sponsored projects – are evaluated using criteria that are consistent with the goals of the RFO and in a manner that encourages competition among the bidders to meet the objectives of the RFO.

[24] Exh. PG&E-1C, Appendix C, p. C-57.

[25] Exh. PG&E-1C, Appendix C, p. C-57.

Also, the IE failed to identify any unique benefit that PG&E would gain from the Agreement's purported learning opportunities that cannot be achieved with existing BTM energy storage pilots detailed below.

The IE only identified one benefit of the Agreement, which was to "ultimately gain experience operating various resource types and configurations."[26] PG&E, however, is not operating this resource since Stem is the resource's scheduling coordinator[27] and demand response aggregator.[28] The IE identifies Stem as the proprietor of the technology that will be used to bid the resource into the CAISO market.[29] While PG&E claims in its application that the project should be considered for the potential learning opportunities it presents, in its response to discovery, PG&E claimed the objective of the Agreement is to obtain 4 MW of Resource Adequacy.[30] As ORA stated in its Opening Brief, PG&E did not assert that it had an RA need. Therefore, it appears Stem—not PG&E—will be the recipient of the lessons learned from the Agreement. Regardless, this is not the objective of the Energy Storage Program. Such learning experiences are best pursued in other programs as shown below.

C. The Agreement is a demonstration project with similarities to other Commission funded BTM energy storage learning experiences

Stem argues, "[i]t is critical to test new and different types of products to learn how they can be used to further the State's goals of reducing peak energy demand and contributing to reliability."[31] Similarly, PG&E suggests that the knowledge gained through its BTM contract would be utilized to "operationalize projects with different

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[26] Exh. PG&E-1C, Appx. C, p. C-16.

[27] Exh. PG&E-1, p. 4-5.

[28] Exh. PG&E-1, p. 3-2.

[29] Exh. PG&E-1C, Appx. C, p. C-55.

[30] ORA-2, Response to Question 3; A.16-04-024, p. 1.

[31] Stem Opening Brief, p. 13.

project configurations; accelerate learning for future procurement; help shape future policies; review selection criteria in future RFOs; and, update valuation methodologies."[32] ORA does not dispute the potential benefits of testing new and different types of products to further state goals. However, PG&E already received funding authorization for pilot projects for the specific learning opportunities identified by PG&E and Stem. The pilots described below provide learning experiences similar to the Agreement's underlying business model and participation in the CAISO's day-ahead market. It is not reasonable to duplicate such learning experiences at ratepayer expense in the Energy Storage Program, which is designed to procure cost-effective and viable energy storage[33] for the benefit of the State and its ratepayers.

1. PG&E's Intermittent Renewable Management Pilot – Phase 2, Supply Side Demand Response Pilot, and Demand Response Auction Mechanism

Stem contends that "the [Agreement] is a commercial project with real world benefits. It is unclear which, if any, research and development program would support a project like this one."[34] However, PG&E's Intermittent Renewable Management Phase 2 (IRM2) Pilot, Supply Side Demand Response (SSDR) Pilot, and its Demand Response Auction Mechanism (DRAM) procurements provide the critical learning opportunities and experiences that both PG&E and Stem seek to gain through the Agreement. Like the aggregated energy storage systems under the Agreement, the three pilots discussed below are specifically designed to better operate, incorporate, and improve BTM demand response resources that participate in the CAISO market.

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[32] Exh. PG&E-1, p. 3-5.

[33] Public Utilities Code Section 2836(a)(1).

[34] Stem Opening Brief, p. 15.

D.12-04-045[35] authorized $2,458,336 to fund PG&E's IRM2 pilot in order to explore the integration of resources into the CAISO market to assist with renewable integration.[36] Specifically:

> [The IRM2] was designed to study the feasibility of demand-side resources to participate into the CAISO wholesale market as proxy demand recourse [PDR]. The pilot concentrated on understanding the issues related with direct participation of third-parties and customers including customer acceptance; market transformation challenges [wholesale market, technology]; technical and operational feasibility; and value to the ratepayers, [demand response (DR)] resource owners and the utility on providing an enabling mechanism for DR resources into the wholesale market.[37]

PG&E stated the IRM2 allows for "DR Participants (defined as aggregators and retail commercial & industrial customers) to bid-their DR resources into the CAISO wholesale market."[38] Stem was an active participant in the execution of the IRM2 "using aggregated distribution storage systems."[39]

As a continuation of IRM2, PG&E developed its SSDR Pilot.[40] The SSDR Pilot's objective is to:

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[35] D.12-04-045, *Decision Adopting Demand Response Activities and Budgets for 2012 through 2014*, p. 192; in A.11-03-001 et al.

[36] D.12-04-045, Ordering Paragraph (OP) 80, pp. 229-230 ordered PG&E to submit a proposed pilot plan for its IRM2. PG&E filed 4077-E-B in compliance with D.12-04-045. On April 2, 2013 the Commission's Energy Division Director issued a disposition letter finding PG&E's IRM 2 advice letter filing complied with D.12-04-045. (See, 4077-E-B, Attachment 1, p. 2. https://www.pge.com/nots/rates/tariffs/tm2/pdf/ELEC_4077-E-B.pdf)

[37] Lawrence Berkeley National Laboratory, *Intermittent Renewables Management Pilot Phase 2* (LBNL IRM2 Report), p. 1, publication LBNL 179019 [date April 21, 2015]; *See*, https://drrc.lbl.gov/sites/all/files/lbnl-179019_intermittent_renewable_management_pilot_phase_2.pdf

[38] PG&E Smart Grid Annual Report, p. 16 [filed October 1, 2013]; in R.08-12-009. *See*, http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=3308.

[39] LBNL IRM2 Report, p. 13; *citing*, http://www.greentechmedia.com/articles/read/aggregating-building-batteries-into-grid-resources

[40] D.14-05-025, *Approving Demand Response Program Improvements and 2015-2016 Bridge Funding*

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> [C]ontinue the enablement of DR resource owners to bid in the CAISO market and provide services to help balance the grid and to test DR products that may help with renewable integration, particularly for fast ramping. The Pilot allows third parties, whether they are an aggregator or technology vendor, to realize the value of dispatchable demand . . . PG&E will work closely with the CAISO, IOUs, and various DR resource owners (i.e., direct customers, aggregators, technology vendors) to construct cost-effective solutions that would integrate dispatchable DR resources and assist with future grid needs; whether that be load consumption, load curtailment or continuous energy management.[41]

This pilot is designed to provide residential customers, non-residential customers, and third-party aggregators with access to the CAISO's day ahead and real time markets as a proxy demand response resource, based on their energy opportunity cost.[42] While aggregators are not Scheduling Coordinators for their resources and these systems are not required to provide RA, PG&E's SSP enables demand response resources to participate in the CAISO market. Stem is also a participant in PG&E's SSDR pilot.[43]

PG&E's DRAM pilots also provide the technical and commercial learning experiences that PG&E and Stem rely on to justify the Agreement's high cost. In D.14-12-024, the Commission initiated a competitive procurement mechanism for demand response. Pursuant to this decision, the three IOUs and Energy Division developed a pilot of the DRAM with an auction in 2015 for 2016 delivery, and a second auction in 2016 for 2017 deliveries.[44] Third party aggregators, such as Stem, may bid

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Budget, p. 22.

[41] Pacific Gas and Electric Company's (U 39-E) Demand Response Program Proposals For 2015 And 2016, Attachment B, p. 3.

[42] Pacific Gas and Electric Company's (U 39-E) Demand Response Program Proposals For 2015 And 2016, Attachment B, p. 1.

[43] Exh. PG&E-1, Appendix C, p. C-54.

[44] D.14-12-024, pp. 33-35.

into an IOU's DRAM to provide demand response and system, local, or flexible RA.[45] The purpose of the DRAM, in pertinent part, is to allow IOUs to utilize demand response as an RA resource and to provide experience in the CAISO's day ahead and real time market.[46]

Just like the projects participating in PG&E's IRM2, SSDR, and DRAM, the Agreement allows Stem to aggregate and schedule BTM energy storage to bid into the CAISO market as a PDR resource. In particular, the DRAM provides PG&E and the Commission with an opportunity to: 1) explore different business models and their ability to provide value to the CAISO market as a PDR and RA resource and 2) whether aggregated, BTM energy storage can and should replace traditional demand response products. As noted above, PG&E sought similar learning experiences from the Agreement. Through PG&E's IRM2, SSDR and DRAM pilots, PG&E can gain experience in "operationalizing projects with different configurations," "review selection criteria in future RFOs," and "update valuation methodologies."[47] The early delivery dates for the 2015 and 2016 DRAM allow PG&E to "accelerate learning for future procurement" and "help shape future policies."[48] Also, PG&E and Stem would not be foreclosed from additional learning experiences if the Agreement is not approved considering that the Commission recently issued Resolution E-4803, which requires PG&E to procure additional resources from its 2017 DRAM solicitation.[49] Thus, both PG&E and Stem have already received funding for projects that have similar operating characteristics and identical business model attributes and learning opportunities. Given the existence of demonstration projects and pilots discussed above that reflect the

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[45] Resolution E-4754, p. 2.

[46] Resolution E-4754.

[47] PG&E Opening Brief, p. 13.

[48] PG&E Opening Brief, p. 13.

[49] Resolution E-4803. Approval with Modifications to PG&E's Demand Response Auction Mechanism Purchase Agreements, p. 16. Issued on September 29, 2016.

Agreement's specific use case and attributes, it is not reasonable for ratepayers to fund the project.

2. Electric Program Investment Charge program

The Commission established the EPIC program to fund public interest investments in clean energy technologies and approaches to benefit California ratepayers.[50] Although the IOUs are restricted to technology demonstration investments,[51] technology demonstration is not confined to "testing whether a technology is able to technically and physically provide the desired function"[52] as Stem suggests. Rather, technology demonstration focuses on technologies "or strategies at a scale sufficiently large and in conditions sufficiently reflective of anticipated actual operating environments to enable appraisal of the operational and performance characteristics and the financial risks."[53] Therefore, experimenting with new commercial business models using commercially available technology may be an EPIC opportunity.

Stem states "EPIC projects cannot commit to grid services like Resource Adequacy because they cannot guarantee they will still be around" and "while EPIC projects may test operational models, they do not demonstrate value to be gained from specific provisions of commercial contracts."[54] To the contrary, D.13-11-025 authorized

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[50] D.12-05-037, OP 1, p. 99.

[51] D.12-05-037, OP 5, p.100.

[52] Stem Opening Brief, p. 15, *citing*, D.12-05-037, p. 2.

[53] D.12-05-037, OP 3, p. 100. Also, *Id*., p. 40 stating:

> By deployment, we mean installations that are directly interconnected or located on the electricity grid of the IOUs. Deployment may also include strategies and other activities that are not specifically about the deployment of a technology itself, but are designed to test successful ways of encouraging customer adoption of clean energy technologies, such as electric vehicles, energy efficiency, or renewable generation, for example. [Emphasis added]

[54] Stem Opening Brief, p. 16.

PG&E to recover ratepayer funds for Project 1.01, Energy Storage Market Operations,[55] which commits commercially-available energy storage technology (Sulfur Sodium Batteries) to grid services and demonstrates value to be gained from commercial contracts in its 2012-2014 EPIC investment plans.[56] Project 1.01 is intended to help address the "Lack of Commercial Operating Experience" identified in D.12-08-016[57] as one of the barriers to energy for energy storage.[58] Project 1.01's scope includes:

- Develop and deploy technology to enable fully automated resource response to CAISO market awards.
- Quantify the values that battery resources can capture in CAISO markets.
- Inform Cost-effectiveness Models
- Provide Guidance on Regulatory Compliance [59]

Similarly to Project 1.01's scope, PG&E seeks to develop lessons learned from the Agreement to "update valuation methodologies" and "help shape future policies."[60]

In its 2015 EPIC annual report, PG&E stated it partnered with CAISO to deploy the first energy storage asset modeled as a Non-Generator Resource and provided feedback for software improvements[61] and its next step is to execute automatic bidding

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[55] Project 1.01 aims to "develop technologies and strategies for efficient and optimized bidding and scheduling of Energy Storage Technologies (ESTs) in California ISO markets and demonstrate strategies using PG&E's existing Sodium Sulfur Battery Energy Storage," PG&E EPIC 2015 Annual Report, p. 10 [filed February 29, 2016]. *See*, http://www.pge.com/includes/docs/pdfs/about/environment/epic/EPICAnnualReportAttachmentA.pdf

[56] D.13-11-025, *Decision Addressing Applications for the California Energy Commission, Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company for Approval of Their Triennial Investment Plans for the Electric Program Investment Charge Program for the Years 2012 through 2014*, OP 7, p. 135 [issued November 14, 2013]; in A.12-11-001 et al.

[57] D.12-08-016, *Decision Adopting Proposed Framework for Analyzing Energy Storage Needs*, pp. 19-20 [Issued August 2, 2012]; in R.10-12-007.

[58] A.12-11-003, Attachment 1, p. 29

[59] PG&E EPIC 2015 Annual Report, p. 10.

[60] PG&E Opening Brief, p. 13.

[61] PG&E EPIC 2015 Annual Report, p. 11.

into the CAISO market.[62] Contrary to Stem's claims above, the Commission authorized PG&E to apply its EPIC funds to participate in technology demonstration projects that used commercially available technology to gain experiences in new strategies as shown in Project 1.01.

D. PG&E did not provide an adequate assessment of the Agreement's project viability

Stem responds to ORA's protest regarding PG&E's lack of a project viability assessment for the Agreement [63] by stating that Stem "has more than 68 MWh of systems operating and under contract."[64] Nonetheless, PG&E did not provide an assessment of Stem's ability to gain an additional 16 MWh of aggregated demand response capable of providing system and flexible RA specifically in PG&E's service territory by September 2017. Therefore, PG&E's evaluation of the Agreement is incomplete.

III. CONCLUSION

PG&E fails to meet its burden of affirmatively establishing the reasonableness of the Agreement. The Agreement is not cost-effective. PG&E requests approval of the Agreement primarily to explore potential learning opportunities, despite the poor economic showing, which is inconsistent with statute and the Energy Storage Program

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[62] PG&E EPIC 2015 Annual Report, p. 11. Also, *Id*, p. 3:

Project 1.01 – Energy Storage for Market Operations leverages the existing two megawatt (MW) PG&E Vaca Dixon Energy Storage System (BESS0 and the 4 MW Yerba Buena BESS. In 2014, the energy storage pilot successfully bid as an available energy resource into the California Independent System Operator (CAISO) Non-Generator Resource (NGR) day-ahead market on a manual basis. Due to the unique nature of an energy storage resource, the 2 MW storage facility offers 4 MW of flexibility to the system, since it can serve as both load and generation. This puts energy storage at a competitive advantage compared to traditional generation. In 2015, Vaca Dixon BESS effectively followed real-time dispatches from CAISO, which is the first time in PG&E history that a resource on the Operational Data Network has successfully received and executed CAISO market awards on an automated basis. This now allows Vaca Dixon to participate in the five-minute, real-time market, making the storage resource even more flexible in meeting the dynamic needs of the grid in the future. PG&E anticipates rolling out similar automated functionality with its 4 MW Yerba Buena BESS in 2016.

[63] ORA Protest, p. 12.

[64] Stem Opening Brief, p. 10.

framework. Moreover, the potential learning opportunities available through the Agreement are similar to, and duplicative of, learning experiences already funded in other Commission authorized programs. Lastly, PG&E did not provide analysis of the Agreement's project viability characteristics. If approved, the Agreement would require ratepayers to fund a project of low economic value, in order to gain learning opportunities already being funded and sought through existing programs. For these reasons and those identified in ORA's protest and opening brief, the Commission should reject PG&E's Second Application.

Respectfully submitted,

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October 7, 2016